

Ocean Sci. Discuss., community comment CC1
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Comment on os-2021-78

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Community comment on "Occurrence of structural aluminium (Al) in marine diatom biological silica: visible evidence from microscopic analysis" by Qian Tian et al., Ocean Sci. Discuss., <https://doi.org/10.5194/os-2021-78-CC1>, 2021

A fascinating piece of research which on the whole has been carried out with a great deal of care and attention. Perhaps the authors would like to comment upon their choice of pH 8 for the culture medium and how this may be important in their findings. For example, at pH8 and just 2 μM total Al the significant majority of dissolved Al will be present as aluminate, the concentration of the free metal cation will be picomolar. What is the pH at the diatom surface (organic coating of silica frustule) and how might this facilitate uptake of Al at pH8. My guess is that Al is not being taken up as aluminate unless, perhaps, it is in some way able to substitute for similarly structured dissolved species such as borate or even phosphate. The authors present good evidence for the presence of amorphous Al within the BSi structure but how did it get there?